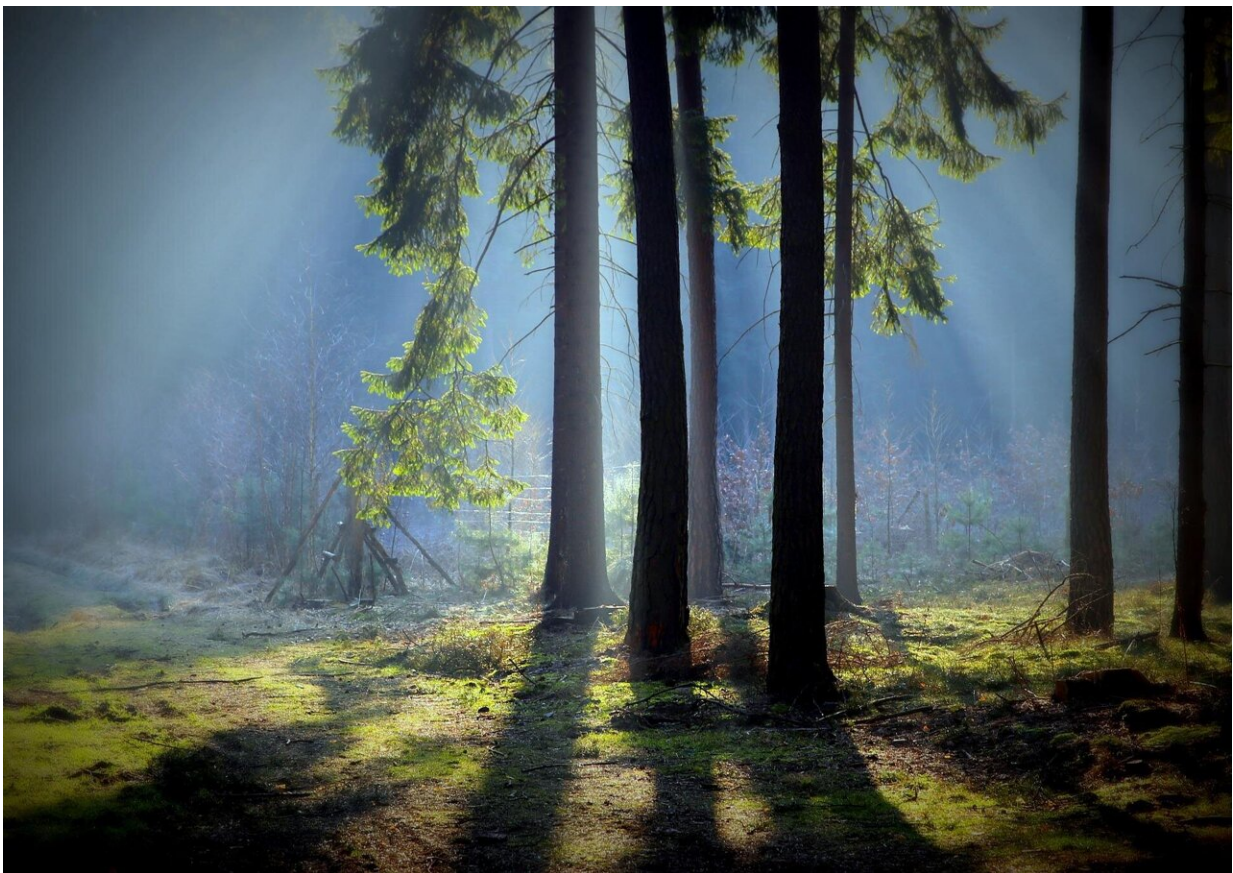


# Effects of litter quality, fauna and environments on litter decomposition in forest ecosystems

May 17 2022, by Zhang Nannan

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Litter decomposition is a key process that controls carbon and nutrient

cycles in forest ecosystems. In litter decomposition at local or broad special scales, the three factors including litter quality, fauna, and environments (decomposition site) that influence litter decomposition. However, most existing studies have focused on the independent effects of these factors on litter decomposition.

Dr. Yang Kai from the Institute of Applied Ecology of the Chinese Academy of Sciences, under the guidance of Prof. Zhu Jiaojun, together with his colleagues and Prof. Geoff Wang at Clemson University, has revealed that the relative contribution of each controlling factor to the litter decomposition based on 5,040 litterbags.

Litter decomposition rates were predominantly controlled by litter quality, then by soil fauna and litter decomposition site in both monospecific and mixed litters. To further investigate which parameter of litter quality influence decomposition rate, the researchers analyzed fourteen parameters of litter quality to indicate that the [magnesium](#) (Mg) concentration and lignin/phosphorus ratio influence the litter decomposition rate independent of the soil fauna size.

They showed that soil fauna, especially macrofauna, significantly increased monospecific but not mixed litter decomposition.

Moreover, litter decomposition enhanced in plantation sites with poor soil nutrient status, which implicate the importance of improving [nutrient cycling](#) for restoring temperate forest ecosystems in soils with poor fertility.

Collectively, this study demonstrates the litter decomposition mechanism in a temperate forest ecosystem. In restoration of soil fertility in plantation sites, the plant-soil feedback should be considered for further study.

This work has been published in *Journal of Ecology*, titled "Litter decomposition and nutrient release from monospecific and mixed litters: comparisons of [litter](#) quality, [fauna](#) and decomposition site effects."

**More information:** Kai Yang et al, Litter decomposition and nutrient release from monospecific and mixed litters: Comparisons of litter quality, fauna and decomposition site effects, *Journal of Ecology* (2022). [DOI: 10.1111/1365-2745.13902](https://doi.org/10.1111/1365-2745.13902)

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